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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,877	03/10/2004	John T. Loper	EI-7630	5081

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EXAMINER	
GOLOBOY, JAMES C	
ART UNIT	**PAPER NUMBER**
1714	

DATE MAILED: 12/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/797,877	LOPER ET AL.	
	Examiner	Art Unit	
	James Goloboy	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-57* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-48 and 55-57* is/are rejected.

7)☒ Claim(s) *49-54* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/10/2004 & 8/25/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-7, 19-32, 48, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeGonia (U.S. Pat. No. 5,137,980) in view of Esche (U.S. Pat. No. 6,107,258).

DeGonia, in column 18 lines 35-42 discloses that succinimide dispersants can be produced made by reacting an acylating agent such as an alkenyl succinic anhydride with multiple ("one or more") polyamines. In column 24 lines 65-68 DeGonia teaches polyisobutenylsuccinic anhydride (PIBSA), meeting the limitations of Claims 3-4, 21-22, and 28-29, as an acylating agent. In column 19 lines 6-31 DeGonia teaches specific suitable polyamines, including several aliphatic species, and an aromatic polyamine, p-phenylene diamine (line 31). From columns 24-26, DeGonia provides numerous

examples of succinimide preparations where more than 0.1 molar equivalents of polyamine are used per 1 molar equivalent of succinic anhydride. Although DeGonia does not disclose a specific molar ratio to be used when a mixture of polyamines is used in the succinimide synthesis, the range recited in Claims 1, 19, 26, and 57 is so broad that it is considered to be obvious from DeGonia's teaching that a mixture of polyamines is usable. The use of aliphatic and aromatic polyamines as the multiple polyamines in the succinimide dispersant preparation of DeGonia therefore meets the limitations of Claims 1, 26, 48 (for the case where R^4 is a branched polyolefin), and 57.

In column 20 lines 18-26, DeGonia discloses that linear polyamines, as recited in Claims 2, 20, and 27, are preferred aliphatic polyamines in the preparation of succinimide dispersants. In column 23 lines 19-54, DeGonia teaches that the acylating agent and the polyamine reactants are "proportioned to achieve the desired extent of acylation in the product according to well known principles". Therefore, it is the examiner's position that the molar ratio of acylating agent to amino groups, as recited in Claims 5, 23, and 30, is a result effective variable because changing it will clearly affect the type of product obtained. See MPEP § 2144.05 (B). Case law holds that "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

In column 30 lines 57-59 DeGonia teaches lubricant compositions containing up to 20% by weight of the amination product, falling within the ranges recited in Claims 7 and 25. In column 30 lines 62-65 DeGonia further teaches fuel compositions containing

up to 10% by weight of the amination product, overlapping the range recited in Claim 32.

DeGonia does not teach the specific aromatic polyamines recited in Claims 6, 24, and 31, nor does DeGonia give a motivation for specifically using aromatic polyamines along with aliphatic polyamines in the amine mixture.

Esche, in the reference's Claim 7, discloses a multifunctional lubricant additive comprising the reaction product of an olefin copolymer grafted with a carboxylic acid, preferably maleic anhydride (column 3 lines 8-9), a "coupling compound", which may be an aliphatic polyamine (column 4, lines 37-50), and an aromatic amine, which can be an aryl polyamine. The reaction of the grafted maleic anhydride, aliphatic polyamine, and aryl polyamine is analogous to the reaction of a succinic acylating agent with an amine mixture as taught by DeGonia. In column 8 lines 1-16 Esche teaches that the aromatic amine enhances the performance of the additive, by improving antioxidancy, improving fuel economy, or adding dispersancy. In column 8 lines 18-38 Esche teaches many of the specific aryl polyamines recited in Claims 6, 24, and 31. The use of the aryl polyamines of Esche as a component in the amine mixture in the succinimide preparation of DeGonia therefore meets the limitations of Claims 6, 24, and 31.

It would have been obvious to one of ordinary skill in the art to use a mixture of aliphatic and aromatic polyamines in the succinimide preparations of DeGonia, as Esche teaches that the aromatic polyamines have performance enhancing characteristics.

4. Claims 9-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeGonia in view of Esche as applied to claims 1-7, 19-32, 48, and 57 above, and further in view of Tipton (U.S. Pat. No. 6,133,210).

The discussion of DeGonia in view of Esche in paragraph 3 above is incorporated here by reference. DeGonia in view of Esche discloses the amination product of a hydrocarbyl substituted succinic acylating agent and a mixture containing aliphatic and aromatic polyamines, but does not disclose the method of reacting the components recited in Claim 9.

Tipton, in columns 15-22, discusses the preparation of succinimide dispersants similar to those of DeGonia in view of Esche. In column 22 lines 39-60 (Example B-4), Tipton describes a preparation where a polyisobutenyl succinic anhydride acylating agent (MCP-815) is heated above room temperature, contacted with an amine mixture, and reacted. In column 22 lines 30-36 (Example B-3), Tipton gives an example of this reaction being performed under an inert atmosphere, as recited in Claim 9. No surfactant is used in Example B-4, meeting Claim 10. Claims 11-18 are met when the products and compositions of DeGonia in view of Esche are made using the method of Tipton.

It would have been obvious to one of ordinary skill in the art to use the method of Tipton to make the succinimide additives of DeGonia in view of Esche, as Tipton teaches in column 21 lines 59-60 that succinimides prepared by the method are useful ashless dispersants.

5. Claims 41- 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeGonia in view of Esche as applied to claims 1-7, 19-32, 48, and 57 above, and further in view of Lambert (U.S. Pat. No. 5,888,947).

The discussion of DeGonia in view of Esche in paragraph 3 above is incorporated here by reference. DeGonia discloses in column 30 line 44 that the lubricant composition of the reference may be used as a gear oil, but does not teach a method for lubricating moving parts with the lubricant.

Lambert, in column 1 lines 21-33, teaches that moving parts can be lubricated by contacting them with a lubricant. The use of the lubricant composition disclosed by DeGonia in view of Esche in this method meets Claims 41-47.

It would have been obvious to one of ordinary skill in the art to use the lubricant of DeGonia in view of Esche for the purpose of lubricating moving parts, as taught by Lambert, in order to reduce wear and increase the lifetimes of the moving parts.

6. Claims 8 and 33-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeGonia in view of Esche and Lambert as applied to claims 41-47 above, and further in view of Galka (U.S. Pat. No. 6,427,647).

The discussion of DeGonia in view of Esche and Lambert in paragraph 5 above is incorporated here by reference. DeGonia in view of Esche and Lambert discloses a method of lubricating moving parts with a lubricant, but does not specifically disclose moving parts of a vehicle. DeGonia in view of Esche and Lambert does disclose that the moving parts may be within an internal combustion engine (Lambert's Claim 11).

Furthermore, DeGonia discloses in column 59 lines 63-64 that the succinimide products may be used in crankcase oils and engine oils.

Galka discloses a two-stroke internal combustion engine, and in column 1 teaches that the engines may be used in vehicles such as snowmobiles and marine vessels, meeting the limitations of Claims 8 and 33. The use of the lubricating method of DeGonia in view of Esche and Lambert in an engine, as taught by DeGonia, therefore meets the limitations of 33-39. Furthermore, an engine is part of a vehicle's drive train, meeting Claim 40 as well.

It would have been obvious to utilize the method of lubricating moving parts in an engine of DeGonia in view of Esche and Lambert in a vehicle, as taught by Galka, to improve the performance and durability of the vehicle.

7. Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeGonia in view of Esche as applied to claims 1-7, 19-32, 48, and 57 above, and further in view of Carrick (US PG Pub. No. 2002/0147116 A1).

The discussion of DeGonia in view of Esche in paragraph 3 above is incorporated here by reference DeGonia in view of Esche discloses a lubricant additive in accordance with Claim 4, but does not teach the methylvinylidene isomer content of the polyisobutylene.

In paragraphs 48-85, Carrick discloses acylated nitrogen-containing compounds, such as the lubricant additives of DeGonia in view of Esche. In paragraph 61, Carrick

teaches an embodiment where the polyisobutylene has a methylvinylidene content of at least 70%, as in Claim 55.

It would have been obvious to one of ordinary skill in the art to use the high methylvinylidene polyisobutylene of Carrick in the succinimide additives of DeGonia in view of Esche, as a higher methylvinylidene content causes the polyisobutylene to be more reactive.

8. Claim 56 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeGonia in view of Esche as applied to claims 1-7, 19-32, 48, and 57 above, and further in view of Graham, (U.S. Pat. No. 5,814,111).

The discussion of DeGonia in view of Esche in paragraph 3 above is incorporated here by reference. DeGonia in view of Esche discloses a fuel composition comprising a minor amount of the additive of Claim 26, but not a method of fueling a vehicle's engine with the composition.

Graham discloses a fuel (gasoline) composition, and in columns 17-18 (particularly column 17 lines 54-63 and column 18 lines 21-37) teaches that the composition may comprise a polyisobutenyl succinimide additive similar to that of DeGonia in view of Esche. In column 17 lines 22-26 Graham teaches that the composition may be used to operate an internal combustion engine, meeting Claim 56, and in columns 18-20 Graham provides examples of the compositions being used to fuel engines.

It would have been obvious to one of ordinary skill in the art to use the fuel composition of DeGonia in view of Esche to fuel a vehicle's engine, as Graham teaches that a fuel comprising an ashless dispersant may be used to operate an internal combustion engine.

Allowable Subject Matter

9. Claims 49-54 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not disclose or suggest a polyisobutylene on the side group of the bis-succinimide.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Migdal (U.S. Pat. No. 5,062,980) discloses crosslinked succinimide dispersants for lubricant compositions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Goloboy whose telephone number is 571-272-2476. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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